The National Center for Academic Transformation

Experts in improving learning and reducing cost in higher education.

The Learning MarketSpace, January 2008

A quarterly electronic newsletter of the National Center for Academic Transformation highlighting ongoing examples of redesigned learning environments using technology and examining issues related to their development and implementation.

TABLE OF CONTENTS:

1. THE CAT VIEWPOINT

Offering perspectives on issues and developments at the nexus of higher education and information technology

Developmental Courses: An Oxymoron? (Continued)

In the October 2007 issue of *The Learning MarketSpace*, we described a new initiative launched by the Tennessee Board of Regents (TBR) to reform its remedial and developmental math and English curriculum. Its goal is to develop and implement a more effective and efficient assessment and delivery system that will increase completion rates for students and reduce the amount of time they spend in remedial and developmental courses, as well as decrease the amount of fiscal resources dedicated to remedial and developmental education.

We noted that a unique aspect of the TBR initiative is its emphasis on modularizing the curriculum. We also noted that most of the TBR institutions that applied for funding to participate in the program struggled with the concept of modularization. Most planned to have students continue to meet in small groups in traditional classroom settings, and most planned to have “teacher-led” activities dominate the redesign. They could conceptualize how to modularize course content but not how to modularize the student experience.

In contrast, six of the TBR institutions have developed innovative plans to individualize the student experience (i.e., diagnosing individual students' strengths and weaknesses and creating individual paths for them to correct their deficiencies) and allow them to progress through the course content at variable rates: **Austin Peay State University, Chattanooga State Technical Community College, Cleveland State Community College, Columbia State Community College, Jackson State Community College** and **Northeast State Technical Community College**. Each represents a unique approach to redesigning remedial and developmental courses.

Since NCAT is working closely with the TBR to ensure that improvements in student learning outcomes and reductions in instructional costs are carefully measured and documented, this project should go a long way in discovering the most effective and efficient ways to make a real difference in this critical area of educational need and to provide models that the rest of the country can emulate.

Let's take a look at the role of modularization in each of the six project plans.

Not surprisingly, the Emporium Model pioneered at Virginia Tech and replicated at many additional institutions is ideally suited to the goals of the TBR initiative, and **Cleveland State Community College** plans to redesign three math courses (Basic Math, Elementary Algebra and Intermediate Algebra) using that model**.** Drop-failure-withdrawal (DFW) rates in these courses currently average 45%. Cleveland State will use either *MyMathLab* or *MathZone* instructional software. Students will meet one hour in class and two hours in a large computer lab. The one-hour class meetings will be held in small labs (20 computers). Instructors will not lecture; students will work online and instructors will help students individually. Instructors will also review student progress and help students with their action plans for the coming week. The large computer lab will be available 54 hours per week to allow students to work at their convenience. The lab will be staffed by instructors and peer tutors to provide assistance to the students. Course material will be organized into 10 to 12 modules, which students will complete at the rate of one or more each week. All homework and testing will be done online. Quizzes on each module can be re-taken multiple times until students display mastery. Students will have the option of completing more than one module each week—i.e., they can move through each course at an accelerated pace. Students who complete a developmental math course before the end of the term will be allowed to begin the next developmental course immediately.

We were not surprised to see Cleveland State choose the Emporium Model for a math redesign, but we were very pleased to see the same model chosen for a reading redesign! **Northeast State Technical Community College** will move away from the traditional course delivery of small sections to a learner-centered, active learning mode supported by interactive, modularized learning software in its redesign of Basic and Developmental Reading. One large section of all enrolled students will replace traditional small sections (~17 students), which typically experience DFW rates ranging from 34% to 45%. Students will be required to spend three hours weekly in a reading center open 35 - 45 hours per week where they will have access to high-quality web-based interactive learning materials and resources and individualized face-to-face assistance. Students will also have access to web-based online learning materials 24/7 from anywhere they choose. *Tegrity* software will be utilized to provide students with pre-recorded lectures and discussions of key course concepts. Students will also be required to carry out collaborative learning activities by joining an online learning community and completing weekly online discussion and reflection on the course content.

Northeast will reorganize the two reading courses into 16 modules using *MyReadingLab*. Each module will have clearly defined learning objectives, tutorials, practice exercises, assessments for mastery and built-in deadline. Students will initially take a diagnostic test on their reading skills and their reading levels to ascertain their reading capability. Based on the diagnostic results, students will receive a personalized study plan that contains the modules necessary to gain the reading skills they lack and to improve their reading levels. Students may exit a course at any time when they pass the module tests and a comprehensive course post-test. Early exit will allow students to spend additional time on other courses they are taking and also increase their confidence as successful learners. Remediation will be provided to those who fall behind the learning schedule, and corrective actions will be taken by instructors to keep students on track so that they can finish course within the semester.

The team at **Austin Peay State University** (APSU) has developed a very innovative idea to redesign two developmental math courses where approximately one-half of the students either fail or withdraw. Their redesign will eliminate developmental courses entirely!Students whose placement tests indicate developmental needs will enroll in the core math course required for their major—either Foundations of Mathematics or Elements of Statistics—and will receive supplemental academic support on a just-in-time basis to remove the deficiencies in mathematical competencies required for success in the core course. The redesign model selected by APSU is based on the Structured Learning Assistance (SLA) model developed by Ferris State University in Michigan. The core courses will not change in content but will be linked to SLA workshops consisting of computer-based instruction (*MyMathLab*), small-group activities and test reviews to provide additional instruction on key mathematical concepts within the courses. The statistics workshops will also use *Fathom* and *Minitab* in addition to *MyMathLab*. SLA workshops will be facilitated by students who have excelled in math and have been recommended by math faculty.

During the initial meeting of the workshop, students will be assessed to determine their specific math deficiencies. APSU's math faculty have collectively determined the prerequisite competencies that are required in order for students to successfully complete each of the two core math courses involved in the course redesign. Only the deficiencies which are deemed necessary for success in the core mathematics course will be addressed during the workshops. Students will be individually assigned modules within *MyMathLab* based on the results of the assessment. Students will complete the modules on a just-in-time basis so that they are prepared to use the associated mathematics skills as the core course requires. In addition, the workshop leader will review the more difficult concepts that were covered during class instruction. Just-in-time instruction on prerequisite competencies is designed so that students will use the concepts during the following class session, which in turn will help them see the value of the workshops and motivate them to do the exercises.

Jackson State Community College plans to combine parts of the approaches used by Cleveland State and APSU. The course redesign will use the Emporium Model, creating a learning center where students will work with *MyMathLab* and receive immediate assistance from instructors and tutors. Jackson State will re-organize the three developmental math courses, which currently face a failure rate of ~44%, into a single course organized in nine modules. But somewhat like APSU's just-in-time approach, students will be required to master only those concepts needed for their career goals which have been identified as deficiencies. Jackson State will survey all career programs on campus to determine which modules their students will be required to complete prior to admission. Pre-requisite competencies for general-education mathematics courses will be reviewed to determine pre-requisite modules.

A pre-test on an established set of competencies will determine what concepts students will be required to master for their majors. Following this assessment, each student will receive an individualized learning contract detailing a list of those modules that need to be mastered. The contract will also include a schedule for completion of each module which will provide a path to achieving the desired learning outcomes. Student learning will be accommodated by online tutorials, video lectures, instructor-led lecture/discussion groups, organized group study, one-on-one tutoring, and other activities housed in a learning center. The center will offer remediation for students who fall behind in scheduled work and acceleration for students who are capable of moving through the modules more quickly. The redesign will create an enhanced developmental math program that will prepare students for their own educational goals whether they involve beginning a program of study in a field that requires advanced mathematics, completing a general education mathematics course, or applying for admission to Jackson State's nursing or allied health programs.

Chattanooga State Technical Community College (CSTCC) plans to redesign its three developmental math courses which serve ~3600 students annually. These courses experience low student success rates (excluding withdrawals) ranging from 51% to 64%. Most students are currently taught in a traditional lecture format with one instructor teaching up to 28 students in a class supplemented with computer-based homework using *MyMathLab*. Students also have the option of working in a lab setting to complete all homework. Recognizing from past experience that using *MyMathLab* as a supplement rather than as the focus of the course and having learned that "freshmen don't do optional," CSTCC will standardize content and assessment across all sections and require students to work in the lab. Students will spend two hours in class and two hours in a computer lab each week. The computer lab will be open ~65 hours per week, staffed by professional tutors, faculty and student tutors. Students in this active learning environment will be able to progress at their own rate, receiving immediate feedback from the software and one-on-one assistance. They will also be encouraged to work collaboratively on the homework.

The college's redesign plan will modularize the course. On the first day of class, a challenge test will be administered to each student in order to determine module placement. If a student successfully completes a challenge test (80% or higher), he or she will be given credit for that module and will proceed to the next module in the sequence. Students will move from one module to the next (called "module promotion") by achieving a 75% or higher score on that module post-test. If a module post-test is not passed on the first attempt, the student will repeat the module. Students may continue on in the modules from the subsequent course. When students begin the next semester, they will either continue in the module that was not completed or take the next challenge test for module placement. The module approach will support various learning styles and eliminate the conflict of mastering multiple topics simultaneously.

At CSTCC's main Amnicola campus, students will be placed into large sections of ~90, up to a maximum of 110 students. The sections will be team-taught by three instructors. Two will hold large class lectures for students who are progressing in a standard sequence. The third instructor will teach two module sections, one for students who are ahead of the standard sequence and one for students who are falling behind. At CSTCC's satellite campuses, a similar two-plus-two arrangement will be used, but one instructor will teach up to two modules.

Finally, **Columbia State Community College** (CSCC) will use a phased approach in its plan to redesign its developmental writing and reading programs, which comprise four three-hour courses, all of which suffer from poor retention with DFW rates of more than 50% in some semesters. During the initial phase of the CSCC redesign plan in spring 2008, two reading courses will be compressed into a single three-credit course, and two writing courses will also be compressed into a single three-credit course. Instructional software (*MyWritingLab* and *MyReadingLab*) will provide students with skills-based learning tools, allowing for a more standard use of class time across sections that focuses on hands-on reading and writing practice. This pilot period will provide instructors the essential opportunity to analyze the strengths and weaknesses of the new software and allow them to work with students operating at a variety of proficiency levels in a single classroom setting.

During the second phase in fall 2008 semester, the reading course will be divided into three one-hour modules (Vocabulary, Comprehension and Advanced Comprehension). The writing course will be divided into four one-hour modules (Punctuation and Mechanics, Grammar and Usage, Paragraph Writing, and Introduction to Essay Writing). Each one-hour module will be taught in five weeks. Students will only assemble as a group for one 80-minute class period per week for lecture and practice of areas identified by the instructors during the first phase. The hybrid modules will be managed through Online Campus (Desire to Learn), where students will have links into their required software materials, assignments, grades, calendar and communication tools. Since the Paragraph and Essay modules will require significant grading time for instructors, they will be facilitated in smaller groups of 20. The Punctuation and Mechanics and Grammar and Usage modules will be driven primarily by the software and graded likewise, allowing for a class size of 40.

All students who enroll at CSCC with a reading or writing requirement will take a COMPASS test for the discipline in which they have placed, which will determine the modules required for each student. Students will be required to demonstrate a 75% proficiency to earn credit for completion of a module. Flexible scheduling will

provide students an opportunity to complete all their reading and writing requirements within one semester and will also provide them with an opportunity to repeat unsuccessful modules.

Learning from Experience

Just about all of these institutions have had some kind of prior experience in using instructional software in remedial and developmental courses in an effort to improve success rates, but they have not experienced a significant increase in student success. They have learned some valuable lessons from those experiences that correlate with the experiences of successful NCAT projects, which include the importance of

- Coordinating faculty efforts

  Rather than leaving it up to individual instructors to decide whether or not to use instructional software and how to use it, these new redesigns will coordinate the efforts of all course instructors so that all students receive a uniform, high-quality learning experience.

- Redesigning the whole course

  In the past, TBR institutions have offered paired courses, combined courses, fast-track courses and online courses in remedial and developmental programs with negligible success. In many cases, these were primarily pilot projects that received limited advertising and often very small sections that provided an option, at the last minute, to those students who had registered too late for any other section. The new redesign plans will take on the whole course and make sure that the campus is well-prepared to publicize and explain the new opportunities to students.

- Using software as the focus of the course rather than as a supplement

  Many past efforts used a textbook supplemented with some online tutorial software with limited usefulness. These new redesigns make software a centerpiece of their redesigns.

- Recognizing that freshmen don't do optional

  Some TBR institutions have tried to alter their course delivery systems from a traditional lecture class without a technology component to a "self-paced," fully computerized course. The result was that, in some cases, success rates dropped by 20 percentage points. The new redesign efforts make student participation mandatory within a well-structured course that includes milestones for completion.

- Providing students with individualized assistance

  Historically, some TBR institutions have offered these courses in a computerized classroom but with a traditional instructor-centered and lecture-based format, which unfortunately allowed very little or no individual assistance in class to accommodate the wide range of student learning needs. All of the new redesign plans include many different ways of providing students with *individualized* assistance and, in many cases, at times convenient to them on-demand as needed.

What about Cost?

Remember that in addition to increasing student learning, one of the goals of the TBR initiative is to reduce the amount of time students spend in remedial and developmental courses, thereby reducing the cost to students, as well as to decrease the amount of fiscal resources that are dedicated to remedial and developmental education by the TBR. All of these redesign plans will reduce the institution's cost of proving remedial and developmental education; projections range from a 21% to a 51% reduction. Modularizing the courses allows the institutions to decrease the number of sections offered. Relying on high-quality instructional software to offload time-consuming faculty tasks like grading allows the institutions to increase section size. Fewer instructors will be required to teach remedial and developmental courses. In most cases, that means reducing the number of adjunct faculty, who are often difficult to find, and relying more heavily on full-time faculty.

Implications for Others

A November 2003 NCES study revealed that nationwide, 28% of freshmen entering college in 2000 were enrolled in one or more remedial reading, writing, or mathematics courses. At public two-year institutions, 42% of freshmen enrolled in these courses and at public four-year institutions, 20% of freshmen were enrolled. That same study showed an increase in the average length of time that students spent in remedial education courses. For example, between 1995 and 2000, the proportion of institutions that reported an average of one year of remediation for students increased from 28% to 35%, while the proportion indicating an average of less than one year of remediation for students decreased from 67% to 60%. Public two-year colleges were more likely than public four-year institutions to report that students spent an average of one year or more on remedial courses.

Clearly the implications for colleges and universities around the country of the outcomes produced by the TBR initiative are substantial. By putting students first and organizing their redesigns around the individual needs of students rather than the convenience of institutions, these pioneering institutions may well make a major contribution to improving the ways in which all of us help students prepare for college success and move more rapidly to degree completion. We'll keep you posted on the results!

--Carol A. Twigg

2. What's New

Featuring updates and announcements from the Center

Education Sector to Produce Major Policy Action Report on NCAT

With support from Lumina Foundation for Education, Education Sector plans to produce a major publication to document the NCAT story and translate our research into clear, actionable findings and recommendations for educators, key policymakers, the media, and the general public. The goal of the project is to increase awareness and adoption of processes to increase productivity in undergraduate education by boosting student learning results while cutting institutional and student costs. The project will provide information and assistance to key policymakers at the state and federal levels, and to opinion leaders in the media and elsewhere who are unaware of the successes achieved by NCAT and its participating institutions. According to Kevin Carey, Education Sector's research and policy manager who will serve as the principal investigator, this lack of knowledge influences the way policy makers think and talk about issues of cost and quality and ultimately compromises the quality of the policies they create.

Education Sector researchers will conduct personal interviews with educators, administrators and students at the institutions that participated in the Pew-funded Program in Course Redesign as well as interviews with a representative group of institutions now considering or implementing similar redesigns. In addition, because some of the redesigns were completed as early as 2002, Education Sector's research will include new, unpublished data to further understand the impact of course transformation on university costs and student learning. These data will allow for a better understanding of the longer-term sustainability and impact of the NCAT transformation process. The project will also focus on the larger context of the role of technology in education and the policy and institutional dynamics of cost, price, and educational quality. By demonstrating the possibilities of new and innovative practices in undergraduate education, Education Sector hopes to both speed the dissemination of these ideas to practitioners and change the overall policy context for state and national decision-makers.

Education Sector is an independent education policy think tank devoted to developing innovative solutions to the nation's most pressing educational problems. As a nonprofit and nonpartisan organization, Education Sector is both a dependable source of sound thinking on policy and an honest broker of evidence in key education debates. To learn more about Education Sector, see www.educationsector.org. Kevin Carey has written on higher education policy for publications including *The Washington Monthly*, *Inside Higher Education* and *Change*. For more information about this project, contact Kevin Carey at kcarey@educationsector.org.

New Addition to the NCAT Web Site - Good Advice

As NCAT works with more states, systems and institutions, we are constantly seeking ways to share what we have learned with the higher education community so that others may benefit. What really contributes to improved student learning? What might seem like a good idea but really has no impact on students? To this end, NCAT has added a new section on its web site that we're calling, "Good Advice." It can be accessed from the NCAT web page, "Course Redesign Planning Resources." Links to short essays include:

- Can Online Education Scale? A discussion of new models for fully online courses and programs that increase learning while reducing cost.
- How to Use Mastery Quizzing to Improve Student Learning: A summary of what NCAT's Redesign Scholars in psychology believe to be the most effective ways to use quizzing.
- Learning Teams Led by Undergraduate Learning Assistants: A description of a particularly effective use of learning teams at the University of Colorado at Boulder .
- Math Lectures: An Oxymoron? A discussion of why the Emporium Model has consistently produced spectacular gains in student learning and impressive reductions in instructional costs.

If you have questions about these new resources or want to suggest other topics to include, please contact Carolyn Jarmon at cjarmon@theNCAT.org.

3. CENTER CHRONICLES

Featuring initiatives to scale course redesign through state- and system-wide redesign programs

Mississippi Holds First Course Redesign Workshop

On November 15, 2007, about 200 representatives of the eight Institutions of Higher Learning (IHL) in Mississippi gathered in Jackson, MS to kickoff the Mississippi Course Redesign Initiative. The purpose of this session was to provide all interested members of the university community the opportunity to learn more about the initiative and why they may want to participate. During the 2007-2008 academic year, the IHL expects to award up to 15 grants to support redesign projects. It is anticipated that most course redesign projects can be completed for $50,000 and most awards will be in this range. An additional $50,000 per project may be awarded to projects of exceptional merit requiring significant equipment purchases (e.g., establishing a mathematics emporium). Those who decided to participate in the program submitted responses to seven Course Readiness Criteria on January 15, 2008. Twenty-two submissions were received from all eight IHL institutions: **Alcorn State University, Delta State University, Jackson State University, Mississippi State University, Mississippi University for Women, Mississippi Valley State University, University of**

Mississippi and University of Southern Mississippi in anthropology, art appreciation, biology, chemistry, computing, economics, English composition, journalism, mathematics, nutrition, psychology, Spanish, statics, statistics and technical writing. A second planning workshop for redesign teams will be held on February 28, 2008, in Jackson, MS. For more information about this program, see http://www.thencat.org/States/MS.htm or contact Dennis Watts at dwatts@ihl.state.ms.us at IHL.

What Does NCAT Mean by "Pilots"?

Immediately following this item are a number of updates provided by redesign teams from the University System of Maryland and the Arizona Board of Regents. In each case, the teams are reporting on the "pilot" phase of their redesigns. NCAT recommends that every large-scale redesign project conduct a "pilot" of their redesign before moving to full implementation. What do we mean by a pilot? A pilot involves testing the redesign idea, including most if not all of the important quality improvement and cost savings characteristics of the planned redesign, with a sub-set of students enrolled in the course. Enrollment in the pilot section(s) needs to be large enough so the redesign team can learn what problems students are likely to face and how to resolve these prior to scaling up to full implementation in all sections of the course. The pilot period provides an opportunity for the redesign team to uncover technology issues or any problems with newly designed assignments or activities that might emerge. For some institutions, the pilot term also provides a time to collect consistent data on student learning from both traditional and redesign sections that can be compared when consistent historical data are not available. For many institutions, the pilot has provided a time to make sure that important audiences both on and off campus have been informed of changes in the course and to be sure that all potential "bumps in the road" have been smoothed. Overall, a pilot provides the redesign team with a "dress rehearsal" of the redesigned course and an opportunity to resolve any issues that may arise. Teams have learned that it is much easier to solve problems with 150-200 students rather than with 1,000 students!

University System of Maryland Redesign Pilots are Underway

Redesign pilot projects are underway in Maryland. A systemwide initiative included a year-long planning process that began in fall 2006. Now teams are actively engaged in testing their redesign plans and modifying these as needed. Teams from most of these projects will give full reports at the Redesign Alliance Conference in March 2008 described below.

Coppin State University (CSU) plans to use the Replacement Model to redesign two developmental mathematics courses, a five-credit Beginning Algebra course and a three-credit Intermediate Algebra course. CSU will establish a student-centered learning environment in computer labs to replace most class meetings. One critical decision made by the team in summer 2007 was to move from their original choice of EDUCO educational software to *MyMathLab*. Lab hours will be used by students to work through computerized tutorials, which will allow students to focus on areas where they need more help. During fall 2007, the team started developing the courses using *MyMathLab* and *CourseCompass*. In spring 2008, four sections of algebra will be piloted. To learn more, contact Nicholas Eugene at NEugene@coppin.edu.

Frostburg State University (FSU) is on schedule to offer two pilot sections of its redesigned General Psychology course during the spring 2008 term. Using the Replacement Model, FSU will reduce the number of in-class meetings by half. During the in-class meetings, interactive activities will be used for most of the period rather than lectures. Online activities include independent and group work. Students will complete self-assessments and take mastery quizzes on the week's material. Quizzes will produce a personalized study plan for each student that provides specific feedback on what they have or have not learned and suggests extra learning materials. Students will also interact in small groups moderated by undergraduate learning assistants (ULAs) and complete academic simulations and other scholarly activities. ULAs have been chosen based on specific selection criteria. Half will graduate in the spring, and half will return in the fall to assist in the course. A new course has been created to train and support the ULAs, which will provide credit for their work. In addition, a new certificate program on "Leadership in Psychology" has been created, which will provide the ULAs with additional coursework to help them learn about how to be good leaders. The new ULA course will be the central component of the certificate program. Both the new course and certificate program are going through the approval process at the university and system levels and should be in place for the fall 2008 semester. To learn more, contact Megan Bradley at MBradley@frostburg.edu.

The redesign team at the **University of Maryland Baltimore County** (UMBC) is on track to pilot the new version of Introductory Psychology in spring 2008. In preparation, the team reviewed products from Cengage Learning, McGraw-Hill, Pearson and Wiley. Presentations by representatives from each publisher were conducted through early June. Team members were able to view publisher's online activities, determine the strengths and weaknesses of each product, test the compatibility of the products with existing technology at UMBC and select the product that met most of its content and technological needs. McGraw-Hill was selected to provide a customized lab accessible through Blackboard. Throughout the summer, the team leader and a graduate student reviewed all McGraw-Hill's online activities and provided a listing of recommended lab activities to the redesign team. Faculty approved each lab activity and worked with McGraw-Hill to design a lab assignment sequence. With the help of the Blackboard administrator at UMBC, labs were loaded into Blackboard and made available for students to use in fall 2007. Throughout the semester, errors in questions and technological difficulties were addressed in collaboration with McGraw-Hill. By December, the online lab design was agreed upon and sequencing changes for labs were determined, which were sent to McGraw-Hill for reformulation. The lab cartridge for the pilot was scheduled for completion by mid-January 2008. To learn more, contact Eileen O'Brien at eobrien@umbc.edu.

The redesign of Principles of Chemistry at the **University of Maryland Eastern Shore** (UMES) will employ the Replacement Model. Three weekly 50-minute lectures will be replaced by one 75-minute lecture, two hours in a chemistry computer lab and a voluntary discussion session led by an undergraduate learning assistant. A

modularized chemistry tutorial program will assign and grade homework; randomly generate and grade quizzes; assign, grade and compare pre- and post-module assessments; and, monitor student progress and time on task. The UMES redesign team has identified the textbook (*Chemistry, The Molecular Science*, 3rd ed., by Moore, Stanitski, and Jurs, published by Thomson, Brooks/Cole) and accompanying web-based program (*CengageNOW*) that will be used in the redesigned course. During the fall 2007 semester, both resources were successfully piloted in two sections resulting in a 13.43% increase in A grades, a 4.24% increase in A-B-C grades and a 10.49% decrease in D-F grades. The team anticipates that a computer lab dedicated to the course will be ready in time for the fall 2008 full implementation. To learn more, contact Jennifer Hearne at jlhearne@umes.edu.

Context of Health Care Delivery is a two-credit foundation course required of BSN and RN to BSN students at the **University of Maryland School of Nursing**. The course has traditionally been taught in a classroom at two sites and online. The focus of the redesign project is on the classroom sections, which will be redesigned using the Replacement Model. Students will use scheduled classroom time to complete assignments in groups of no more than six; faculty will meet with each group for 30 minutes every two weeks during class time (or more often if requested) to facilitate completion of group assignments. The team is preparing to pilot the course in two sections during spring 2008 on the Baltimore campus. Six of the nine online modules that will replace some face-to-face classes have been developed and posted; the redesign team is reviewing and polishing the remaining three. The course syllabus has been revised and is ready for distribution. Timelines for weekly activities have been developed, and handouts and course materials to be distributed during the first class meeting have been created and reviewed. To learn more, contact Carol O'Neill at ONeil@son.umaryland.edu.

University of Maryland University College (UMUC) is redesigning two online introductory biology courses in two significant ways. First, a three-credit lecture course and a one-credit laboratory course have been combined into a single four-credit course, using the principles of NCAT's Fully Online Model. Second, course content has been greatly enhanced to give students multiple opportunities to engage with course material. These enhancements include automated quizzes with immediate feedback to students, interactive learning objects, tiered levels of self-assessments and virtual lab activities. The content and learning objectives for the course have been fully aligned with national scientific literacy standards. A pilot of Introduction to Biology was offered for the first time in fall 2007. To learn more, contact Kathy Warner at kwarner@umuc.edu.

For more information about the USM initiative, see http://www.thencat.org/States/USMaryland.htm or contact Nancy Shapiro at nshapiro@usmd.edu or Don Spicer at dspicer@usmd.edu.

Arizona Course Redesign Teams Begin Pilots

As part of the Arizona Board of Regents Learner-Centered Education Course Redesign Initiative, redesign teams at **Arizona State University, Northern Arizona University** and the **University of Arizona** have spent the fall term getting ready to pilot their redesign plans during the spring 2008 term. Teams from most of these projects will give full reports at the Redesign Alliance Conference in March 2008 described below.

The redesign of Organizational Management and Leadership at the Polytechnic campus of **Arizona State University** (ASU) is moving forward. During late summer and fall 2007, course faculty identified student learning outcomes. Throughout the fall semester, the team of instructors met regularly to review and revise the learning outcomes and to plan for the pilot. The pilot is underway this spring, and the team is busy working out small details such as answering students' questions about the syllabus and assignments. Along with one section of the redesigned course, ASU also currently offering two sections of the course taught in the traditional format. At the end of the semester, the team plans to assess, measure, and compare the outcomes of the pilot with the two traditional sections. While it's early in the redesign pilot, faculty are noticing clear benefits from their involvement in the project. The three instructors are spending more time comparing, contrasting and talking about their mutual interest in teaching the course. For more information, contact Roger Hutt at ROGER.HUTT@asu.edu.

Arizona State University-Tempe recently completed detailed preparations for the pilot redesign of their introductory accounting course, Uses of Accounting Information. Although some aspects of the redesign were tested in the summer and fall of 2007, the spring 2008 pilot will significantly enhance, integrate and expand the core components of the redesign. Specifically, the pilot will incorporate the content previously included in a separate one-credit course and utilize the functionality of the course management system which will provide immediate and corrective student feedback on homework. Instructors will be able to monitor student performance at the course, section, individual student and specific problem/learning objective level. Instructors will use the software's reporting functionality to provide additional feedback to students and offer assistance at the section and/or individual level as appropriate. Students will be offered expanded options for assistance outside of class by further leveraging existing university tutoring resources and through online "virtual tutoring" sessions that will be tested during the pilot. The number of assessments will significantly increase; specifically, the number of quizzes will double and a higher percentage of the total point value in the class will be tied to exams/quizzes. Quizzes will be distributed online and auto-graded to provide time for more hands-on practice and active learning in class. The course format will shift from three to two class meetings per week, and a portion of the traditional lecture time will be replaced with online/interactive activities outside of class. Course documentation and automation projects will be further developed in order to minimize the amount of ongoing support and time spent on administrative tasks. To learn more, contact Diane Leshinski at Diane.Leshinski@asu.edu.

During the fall 2007 semester, **Arizona State University-Tempe** ran a pre-pilot of their redesign of Computer Literacy to obtain preliminary feedback from students and discover as many unforeseen problems as possible before the official pilot in spring 2008. The pre-pilot included three sections of the course, two hybrid and one online. Before the semester began, an advisory board met to determine the content and assignments for the

course. This meeting was a great success. The group accomplished a lot of work and prepared the final course syllabus and schedule. By the end of the semester, the revised course syllabus was approved by the department's undergraduate program committee and submitted to the university. Student survey responses suggested that students generally like the new format but that some online students felt they were not getting enough help. During the pilot, the team will encourage online students to complete a self-evaluation provided by ASU Online to determine whether or not they would be better served in the hybrid section. Students had many problems with their computer accounts and were not satisfied with the support they received from the University Technology Office (UTO). For the pilot, the team is preparing help documents to address these problems and hope to get most problems solved without the student having to contact the UTO. To learn more, contact Toni Farley at toni@asu.edu.

The team redesigning Public Speaking at the West Campus of **Arizona State University** has been making great progress in preparation for its spring 2008 pilot. The Communication Studies department has hired and completed training of the undergraduate lab assistants (ULAs) who will facilitate the breakout sessions where students will deliver their speeches. These ULAs have all had experience in helping students with speeches for a variety of classes. Customized public-speaking software has been created and put in place to provide students with additional resources to help in writing, creating, and delivering speeches. This software as well as rubrics, expectations and other speech resources have been posted online to allow the students to have immediate access. Team members are looking forward to beginning the upcoming semester with these improvements in place. To learn more, contact Meg McConnaughy at MEG.MCCONNAUGHY@asu.edu.

The redesign of Introductory Biology at **Northern Arizona University** is moving forward as planned and has fostered a collaborative climate within the biology department and with local community colleges. Course instructors have met nearly every week during the fall 2007 semester to agree on course goals, determine the essential course content, develop a single syllabus across sections, develop a standard set of learning outcomes and collaborate with local community colleges. The result is a new syllabus, PowerPoints and quizzes which are being piloted in spring 2008. The team is still working on the coordination of laboratory and classroom content so that these are mutually supportive. Two pilot lab sections are being offered in spring 2008 which are aligned with the lecture and offer multiple opportunities for students to collaborate. The course currently includes supplemental instruction. Peer tutors, called SI Leaders, who have been previously successful in the course, attend the course again, listen to the lectures and take notes. They then hold four one-hour study sessions each week and create worksheets, sample quizzes and tests. Currently there is little communication or collaboration between the SI leaders and the instructor. The redesign will strengthen SI involvement by developing a team-teaching approach including 1) enabling SI leaders to review the results of web-based quizzes with students and be knowledgeable about available tutorials and simulations, 2) training them in the use and benefits of classroom response systems, and 3) involving them in discussion with instructors to share general information regarding the concepts, processes and problems that are being emphasized so they can help students understand that content. The goal is for these peer-led discussions to not only explain course content but also help students develop more effective study skills and strategies. To learn more, contact Catherine Ueckert at Catherine.Ueckert@nau.edu.

The pilot phase of the redesign of Introduction to Psychology at **Northern Arizona University** (NAU) will begin in spring 2008. A large, team-taught section will incorporate a student-response system (clickers) to encourage active learning, provide students with individualized assistance, and support ongoing assessment of student attendance and participation. Outside of the classroom, required web activities will be employed to complement course lectures, using computer-based assessment to increase the amount and frequency of feedback to students and time on task outside the classroom. An early intervention system will target students who are struggling, as indicated by attendance, in-class responses and web activities. Finally, a team-teaching approach will eliminate needless duplication of faculty effort and give students the opportunity to learn from those faculty with the greatest expertise in a given topic area. Rather than teaching a single section of psychology for a full semester, each team member will teach two sections of the course for a half-semester, focusing on those areas of psychology in which they have the greatest experience. In preparation for the pilot section, the team has tested the student-response system and trained faculty on its use. The first training for graduate teaching assistants (GTAs) occurred in December. The most senior GTA team member will serve as an early intervention specialist to track student progress and respond appropriately. The course web site has been established, including four web assignments which capitalize on existing web resources, such as the online Harvard Brain Atlas, to increase and expand student engagement outside of class meetings. To learn more, contact Michelle Miller at michelle.miller@nau.edu.

The goals of the redesign of the Introductory Biology at the **University of Arizona** are to make students more accountable for their own learning, to help them develop the skills they need for careers in the biological sciences and to improve the consistency of the student experience across the eight or more lecture sections offered each year. During fall 2008, the team developed an outline of the materials required for the redesign: weekly tutorials and quizzes, each containing 4-5 conceptual questions on relevant biology topics. Each quiz will also contain 3-4 questions addressing basic mathematics, reasoning, or English skills, which have not previously been addressed directly in the course. For in-class activities and discussion sections, the team is developing modules containing actual data from current or classic biological experiments, with guiding questions that allow the students to explore the ways biological data can be analyzed, depicted and interpreted. The team is now integrating materials from several sources including content faculty have already developed. The team will pilot mastery-learning commercial software in spring 2008. They will analyze student performance on a multiple-choice pre- and post-test given to all ~1600 students enrolled in the accompanying lab course during fall 2007 to determine the topics that are most difficult for students to grasp. A post-test will be designed from a subset of these questions that will be administered at the beginning of several upper-division courses that students take after completing Introductory Biology. The goal is to measure longer-term retention of key concepts taught in the course. To learn more, contact Lisa Elfring at Elfring@email.arizona.edu.

During fall 2007, the General Chemistry redesign team at the **University of Arizona** focused its efforts on developing the first semester of a new year-long sequence that will combine separate lecture and laboratory courses into a single course. The team worked on designing the curriculum that will be followed by all instructors, selecting and adapting course content, common in-class activities and exams, chemical demonstrations and laboratory experiments. A set of weekly lecture and digital lab presentations have been created, which will guide, facilitate and standardize the work of all instructors and teaching assistants in the course. The new materials will be pilot-tested in spring 2008 in three sections of the new officially approved course. To learn more, contact Vincente Talanquer at vicente@email.arizona.edu.

The redesign of A Geological Perspective at the **University of Arizona** intends to maximize student learning and reduce faculty workload in a number of ways. First, much of the traditional lecture will be replaced with in-class activities aimed at developing critical thinking skills and analysis of scientific information. Second, current optional weekly study sessions will be replaced with mandatory break-out sessions where students will work on assignments in small groups and receive one-on-one help on relevant assignments. Third, much of the lecture and written work will be replaced with online assignments and quizzes that review material from the reading and lecture. Assignments and quizzes will be instantly graded, providing immediate feedback so students can continually monitor their progress. And fourth, the number of hours spent by faculty and graduate teaching assistants (GTAs) on preparation, class time and grading will be greatly reduced. For the spring 2008 pilot, class meetings have been reformatted to include active-learning opportunities, allowing small groups to collaborate during the lecture. The instructor and GTAs/preceptors will circulate throughout the classroom to facilitate discussion and answer questions so that students receive the maximum benefit from these activities. There will be 21 weekly break-out sessions, and students will meet with the same GTA/preceptor each week to be comfortable with their break-out session leaders. The number of GTAs has already been reduced from eight to five, and the number of preceptors has been increased from approximately 10 to 24. Preceptors will play a primary role in running break-out sessions and facilitating discussion in the lectures. To learn more, contact Jessica Kapp at jkapp@email.arizona.edu.

For more information about the Arizona Learner-Centered Education Course Redesign Initiative, see http://www.thencat.org/States/ABOR.htm or contact Maryn Boess at Maryn.Boess@azregents.edu.

Tennessee Board of Regents Institutions Begin Pilots

As part of a major grant from the Fund for the Improvement of Postsecondary Education (FIPSE), the Tennessee Board of Regents (TBR) is working with all nineteen institutions in the system to increase the success of Tennessee students in developmental math and English. The number of students who take at least one developmental course is high, and many are not successful after their first enrollment. Six TBR institutions will conduct three consecutive pilots to test various aspects of their redesign plans, the first of which will occur in spring 2008. Four institutions will focus on developmental math: **Austin Peay State University, Chattanooga State Technical Community College, Cleveland State Community College** and **Jackson State Community College**. Two institutions will focus on developmental English: **Columbia State Community College** and **Northeast State Technical Community College**. As noted by Carol Twigg in her article above, a unique aspect of this program is its explicit focus on modularization. The development of better placement systems combined with shorter, more tailored instructional modules will enable students to save time and money by only engaging in the remedial and developmental modules that address their specific deficiencies. Teams from these projects will give full reports at the Redesign Alliance Conference in March 2008 described below. Abstracts describing the six funded TBR projects are available at http://www.thencat.org/States/TBR.htm. Progress reports from these projects will be included in the April 2008 issue of this newsletter. To learn more, contact Treva Berryman at Treva.Berryman@tbr.edu.

4. THE REDESIGN ALLIANCE

Featuring updates from the Alliance, a member organization of institutions, organizations and companies committed to and experienced with large-scale course redesign

The Redesign Alliance Conference to be held March 16 - 18, 2008

The Redesign Alliance Second Annual Conference is scheduled for March 16 - 18, 2008 at the Rosen Centre Hotel in Orlando, FL. A pre-conference orientation session at 4 pm on Sunday, March 16 will provide an opportunity for those new to course redesign to learn how best to take advantage of the conference program. An opening reception and corporate exhibit hall will formally kick off conference activities.

The conference will begin on Monday morning with a keynote address by Kati Haycock, President of the widely respected DC-based Education Trust and a member of the Spellings Commission on the Future of Higher Education, entitled, “The National Context: Why We Need to Do More About Access and Success.” Following this presentation, attendees will be able to participate in one of ten disciplinary showcases and discussion sessions in the academic areas of humanities, natural sciences, social sciences and the quantitative fields. These sessions will provide an opportunity for attendees to discuss specific issues and challenges related to their particular academic areas.

On Monday afternoon, concurrent sessions will feature 30 new course redesigns in many diverse academic areas. Those experienced in redesign will discuss how they are implementing their ideas and what is needed in order to do so successfully. Each session will be offered twice so that participants can attend more than one. Monday’s program will conclude with a plenary panel, “Change Strategies: State- and System-wide Course Redesign.” The panelists will address moving from one course to the entire department, moving from one

department to the entire institution, and moving from one institution to a higher education system. A reception will follow that will offer plenty of time for informal discussions.

Tuesday morning will include ten concurrent sessions focused on Hot Topics in Course Redesign. These topics were identified by Members of the Redesign Alliance as those they were most interested in discussing such as How To Get Started, Working With Commercial Software and Use and Re-use of Materials. Each session will be kicked off by those who have experienced success in relation to the topic and will emphasize discussion among the participants. These Hot Topics sessions will be offered twice so that attendees can attend more than one.

One of the Hot Topic sessions will provide an opportunity for those who have ideas about initiating a course redesign at their home campuses to receive feedback on those ideas. At this Feedback Forum, Redesign Scholars will be on hand to provide guidance and ideas to the teams that attend. Attendees must register specifically for the Feedback Forum when they register for the conference.

The conference will conclude with a plenary panel, “Assessing Student Engagement: NSSE and CCSSE,” and will feature Peter Ewell, George Kuh and Kay McClenney. Higher education is well aware of the demands for greater accountability coming from policy makers, accreditation associations, the Spellings Commission, and so on. Instruments like The National Survey of Student Engagement (NSSE) and The Community College Survey of Student Engagement (CCSSE) are designed to obtain information about student participation in programs and activities that institutions provide for their learning and personal development, including an estimate of how undergraduates spend their time and what they gain from attending college. This panel will discuss how institutions can use data generated by these and other assessments and surveys to identify aspects of the undergraduate experience that can be improved through intentional changes to improve undergraduate teaching and learning.

Hotel reservation deadline is February 14, 2008.

Conference registration deadline is February 29, 2008 or whenever registration reaches 600.

To see the full agenda and to register, visit http://www.theNCAT.org/RedesignAlliance/Conference08.htm.

Corporate Members of the Alliance Prepare for Second Annual Conference

This year’s Redesign Alliance conference will offer more opportunities for attendees to learn more about commercial products and services that can be of great value in a course redesign. At Sunday evening’s Welcome Reception, Corporate Members will offer exhibits of their key products and services and provide detailed information on other activities they have planned during the conference, including activities in hospitality suites. Participants will include Blackboard, Cengage Learning (formerly Thomson Learning), Educational Testing Service (ETS), Hawkes Learning, Houghton Mifflin, McGraw Hill, Pearson Education, and SMARTHINKING. Please plan to take advantage of the opportunity to talk with knowledgeable representatives from these companies.

Redesign Alliance Members Gather at The University of Alabama

On December 1, 2007, the Redesign Alliance and **The University of Alabama** (UA) co-sponsored a day-long seminar, entitled “Learning Mathematics at The University of Alabama: Before and Today” for Redesign Alliance members with an interest in redesigning introductory math courses. Participants had the opportunity to learn more about UA's highly successful math redesigns, to visit the Math Technology Learning Center (MTLC) and to talk with the various kinds of instructional personnel involved. Throughout the day, attendees learned about how the UA project got started, what issues the team faced in implementing their redesign and what learning and cost results UA has achieved. Since the initial course redesign, UA’s MTLC has expanded twice to include four additional courses, and there is demand to expand the lab to accommodate more courses. To learn more, contact Joe Benson at Joe.Benson@ua.edu.

LSU to Host an April 2008 Math Redesign Workshop

If you missed the day-long seminar at The University of Alabama described above, you will have another chance to participate in learning how to solve the “math problem.” On April 17, 2008, **Louisiana State University** (LSU) will host a day-long workshop in Baton Rouge, LA for members of the higher education community to showcase its extremely successful Math Lab which serves more than 4,000 students annually. LSU representatives will share their experiences in redesigning College Algebra as part of NCAT’s Roadmap to Redesign program. Prior to the redesign, LSU’s introductory math program had a high level of student success. Their redesign goal was to maintain that level of quality in the face of diminished resources. LSU has not only been able to reduce the amount of resources devoted to the course but also to achieve the highest level of student success in their immediate history. Attendees will be able to tour two lab locations and talk with LSU faculty, administrators and lab staff who are currently involved in the overall operation. To register for this event, visit http://www.thencat.org/RedesignAlliance/LSUWorkshop.htm. For more information about the LSU redesign, see http://www.thencat.org/R2R/Abstracts/LSU_Home.htm or contact Phoebe Rouse at prouse@lsu.edu.

5. CORPORATE CONNECTIONS

Linking content and software providers with leading edge institutions

Black Hills State University Transforms College Algebra Using McGraw-Hill's ALEKS

Black Hills State University (BHSU) in Spearfish, South Dakota redesigned their College Algebra course using McGraw-Hill's mastery learning program ALEKS (Assessment and Learning in Knowledge Spaces) and new approaches to course delivery. BHSU faculty worked toward increasing students' understanding of algebraic and trigonometric processes, as these were issues known to contribute to students' lack of success in calculus courses. The redesign team also learned that students did not believe that they could succeed in future math courses and in related majors requiring these courses. The results of the redesign were powerful: a 21% increase in pass rates (from 54% to 75%), a 300% increase in enrollment in the next sequential math course and a 25% increase in attendance. McGraw-Hill will feature the BHSU team at the Second Annual Redesign Alliance Conference on Tuesday, March 18.

Pearson to Organize Pre-Conference Workshop on Course Redesign at ICTCM

On March 6, 2008, Pearson Education will organize a pre-conference workshop entitled "Mathematics and Statistics and Course Redesign" at the International Conference on Technology in Collegiate Mathematics (ICTCM) in San Antonio, Texas. This workshop will give participants a unique opportunity to analyze case studies of successful NCAT projects in mathematics and statistics. In the morning, NCAT's Carolyn Jarmon will describe the various models available and best practices in course redesign. In the afternoon, experienced project leaders will provide concrete examples and lead in-depth break-out sessions focused on various aspects of redesign. The projects to be discussed in depth have opted for different NCAT models and different software products so the workshop will provide rich information on options available for those contemplating a project. For further information, see http://www.ictcm.org/program/presession.asp.

6. COMMON GROUND

Reporting on initiatives that share the Center's goals and objectives

ETS Service for Evaluating Student Essays

The workload involved in grading English compositions has long been a challenge for faculty and staff in English departments throughout higher education. In addition, many institutions are trying to encourage writing across the curriculum by infusing writing as part of courses outside traditional composition courses, but the increased workload for faculty can sometimes stymie these efforts. The Educational Testing Service, with its history of developing valid, reliable assessments, has created *Criterion Online Writing Evaluation* to help with this challenge. The Criterion service is a Web-based application that evaluates a student's writing skills and quickly provides scores and diagnostic feedback to both writing instructors and students. Students draft and submit essays and receive immediate feedback in the form of a holistic score and diagnostic annotations within each essay. Assignments can be modified and timed, depending upon the goals of the instructor. The service includes an online handbook as a resource for students. One of the breakout sessions at the Redesign Alliance Conference entitled, "What About the English Department?" will discuss *Criterion* and other computer-based tools that are available to support efforts to improve students' writing skills. Click here to learn more about the Criterion service.

Texas Tech Increases Consistency and Rapid Feedback in English Composition

Changes in approaches to grading essays come in many forms. As reported in the March 10, 2006 issue of *The Chronicle of Higher Education*, **Texas Tech University** (TTU) is changing the way English composition is staffed and how essays are evaluated. In most composition courses in higher education, instructors and graduate assistants teach all sections and grade all student essays. However, at TTU, TOPIC (Texas Tech Online-Print Integrated Curriculum) includes two kinds of instructors: classroom instructors and document instructors. The first group meets once a week with students where they work on grammar, punctuation and other important aspects of the writing process. Students then submit their written essays to document instructors. Each submission is read by two different document instructors and graded based on a rubric that ensures consistency in evaluation. The time students spend in class has been reduced by 50 percent, yet the students are writing more and receiving feedback more quickly. Consistency in grading has greatly increased the quality of the composition course.

Fred Kemp, the originator of this approach, is working with faculty from the **Dallas County Community College District** (DCCCD) as part of the Phase III Texas Redesign Initiative to redesign English Composition at DCCCD. Students at the community college will submit essays through TOPIC; community college faculty will redesign their course based on the Replacement Model used at TTU and will join the team of document instructors. To learn more about this innovative approach to grading English compositions, contact Fred Kemp at fred.kemp@ttu.edu. Fred will also be part of the program at the Redesign Alliance Conference in March.

7. SUBSCRIPTIONS, SUBMISSIONS, ARCHIVES, REPOSTING

The National Center for Academic Transformation serves as a source of expertise and support for those in higher education who wish to take advantage of the capabilities of information technology to transform their academic practices.

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- To submit items for inclusion in this newsletter, please contact Carolyn G. Jarmon, cjarmon@theNCAT.org.
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